

Advanced methodology development of BDS global precise positioning for Intelligent Driving (ABDS-ID) and its demonstration over B&R

Location Based Services (LBS) with high accuracy and reliability is becoming the basic and core information for the realization of smartness and intelligence in the emerging smart city field, particularly for the Intelligent Driving (ID). Towards the new requirement of precise positioning in ID, a series of new methodology will be proposed to solve the key problems of PPP-RTK from BDS B2b-PPP service for multi-GNSS, including the new estimation approach of PPP-RTK corrections, the regional and local atmospheric (ionospheric and tropospheric) delay modeling, and the integrity of PPP-RTK respectively at the cloud and user sides, finally leading to an optimal overall solution to PPP-RTK for autonomous vehicles in practice. Moreover, a prototype PPP-RTK software and system will be developed by the collection of global and local real-time GNSS data stream through the international cooperation, as well as the PPP-RTK terminal for ID. Moreover, the demonstration application and verification experiment will be carried out over the overland Silk Road with the origin of Beijing, and the distance of experiment route is more than 11,000 km. The expected accuracy (RMS, Root Mean Square) of PPP-RTK for autonomous vehicles is about 5cm and 10cm in horizontal and vertical components, respectively, and the first convergence time is less than 2 minutes.

This project is led by the Aerospace Information Research Institute, Chinese Academy of Sciences, and collaborated with the Institute of Solar-Terrestrial Physics in the Siberian Branch of Russian Academy of Sciences, University of Warmia and Mazury in Olsztyn of Poland, King Mongkut's Institute of Technology Ladkrabang in Thailand, as well as that it will also bring about an

all-round cooperation among the young scientists members from the countries over the B&R in the area of PPP-RTK based on multi-GNSS for autonomous vehicles.